SEA BREEZE
Mini-Split Troubleshooting Guide

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Notes on normal operation

- Indoor fan is engineered to run continuously. The purpose of this is to circulate room temperature air around the ambient temperature sensor (located inside the indoor unit), for better temperature control.
- Remote control does not monitor or display room temperature.
- AUTO mode is a factory preset 81°
- AUTO fan operates the fan as necessary to control the room temperature (without the assistance of the Air conditioner)
- Indoor unit operates on **LINE VOLTAGE**
- Normal outdoor temperature operating range is 23°F to 109°F
- Capillary metering is provided in the outdoor unit, therefore both refrigerant lines are low pressure. This design requires that both lines be insulated.
- Audible beep should always be heard when sending commands from the remote control.

Prior to Troubleshooting

Verify the following:

- Remote has good batteries and display is operating
- Input voltage to condenser from disconnect is present and correct on Input terminals of outdoor unit.
- All Timers and automatic modes are turned off.
- Input voltage at indoor unit is present and correct (See table 1 below for voltage checkpoints). If indoor unit is not receiving power from outdoor unit, **DO NOT ATTEMPT TO OPERATE UNIT**. Check wiring between the units, verify that ALL terminals are connected at both ends and the conductors are not shorted or open.
- **Many times, operational issues can be resolved by simply removing and restoring power**. **Cycle power by turning off breaker or pulling disconnect for 1 min.**

MODEL	TERMINALS	READING
9A23YGX	N(1) AND 3	110-120 VAC
12A23YGX	N(1) AND 3	110-120 VAC
12A23ZGX	N(1) AND 3	208-230 VAC
18A23ZGX	N(1) AND 3	208-230 VAC
24A43ZCX	L3 AND L4	208-230 VAC
9H43YCX	L1 AND N1	110-120 VAC
12H43YCX	L1 AND N1	110-120 VAC
12H43ZGX	N(1) AND 3	208-230 VAC
18H43ZGX	N(1) AND 3	208-230 VAC
24H43ZCX	L3 AND L4	208-230 VAC

TABLE 1

Refrigeration Troubleshooting Hints:

Pressure Readings
In order to determine proper efficient operation of these units, It is necessary to check operating pressure. Units that are equipped with 2 service ports, (Liquid and Suction line) often are mis-understood as having a high pressure port. Pressures read at either port should be interpreted as low pressure readings. The differential between the 2 ports should be no more than 15 PSI. Pressures above 15 PSI differential may indicate a blockage in the evaporator assembly.

Contamination and non-condensables
Contamination and non-condensable impurities are hard to detect. In most cases when non-condensables are present, a fluttering fluctuation of the gauge will be present.

Low refrigerant levels
Refrigerant levels must be checked at installation. Refrigerant must be added if necessary. As a general rule with R-22 systems, the pressure at the suction port should be between 60-70 PSI. Failure to properly adjust refrigerant levels can cause inefficient operation. Low refrigerant levels can also be detected by flashing at or near the coil of the indoor unit and will extend all the way back to the outdoor unit in some cases. R-410A systems have a pressure range of 100-150 PSI, dependant on outdoor temperature.

System Blockages
System Blockages can usually be determined by reading pressure. A blocked capillary will provide a Low pressure reading, and will not change with the addition of refrigerant. If the unit in question is a Heat Pump, the unit will have an extremely high pressure in one mode or the other, but typically not in both. A high pressure reading in both directions denotes a blockage of the evaporator coil assembly.

Delta T (ΔT)
Typically these units should provide a temperature differential (ΔT) of more than 20° F as measured at the indoor unit. (except in units with variable speed compressors (12H43ZGX and 18H43ZGX)). A differential of less than 20° F usually indicates a problem in the system.

Overcharging or High pressure conditions
Overcharging a system places high demands on a compressor and is cause for premature failure. Compressors should not be operated if suction pressures are high (above 175PSI for R-410a or 90 PSI for R-22).

External Drier-filters
External driers or filters should not be installed on these systems. These systems are equipped with internal filters as part of the capillary system.

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary. If not, Go to page 1 and see “Prior to troubleshooting”.

Check Flash Codes

Turn unit to “ON”. Carefully watch the indicator lights on the indoor unit. Compare the results to the flash code chart below.

FLASH CODES				
RED	**YELLOW**	**GREEN**	**TRANSLATION**	**SUGGESTION**
1			High Pressure Protect	Check for proper operating pressures
2			Indoor coil freeze-protect	Low air flow to indoor unit. Low refrigerant level
3			low pressure protect	Improper refrigerant charge, contaminated refrigerant.
4			compressor discharge protect	Excessive high pressure at compressor output. verify correct pressures
5			low pressure/Overcurrent protect	Low refrigerant level. Clogged capillary.
6			indoor-outdoor communication error	Disconnect power for 30 seconds. Re-connect power. If error continues, replace control board
8			Hi-Temp protect	Turn System off. Allow to cool for 15 minutes. If error code does not clear, checked for blocked Capillary.
10			AC Voltage Low	Provide correct AC input voltage
	1		Room Temp Sensor open/short	Replace Ambient Air sensor located in indoor unit.
	2		Indoor Coil sensor open/short	Replace Coil Temp Sensor located in Indoor unit
	3		Outdoor Temp Sensor open/short	Replace Ambient Air sensor located in outdoor unit.
	4		Outdoor Coil Temp sensor open/short	Replace Coil Temp Sensor located in outdoor unit
	6		Cooling Overload	Compressor overheating due to excessive load.
	8		Current Overload	High Liquid Pressure, Blocked capillary
		1	Defrost Mode	Allow defrost cycle to complete
		3	Compressor overload protect	High Liquid pressure, Possible overcharge or blocked Capillary
		4	System abnormal	Remove Power, wait 30 seconds, restore power

9A23YGX, 12A23YGX, 12A23ZGX (CONTINUED)

Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Indoor unit is not receiving power** Verify power input to the indoor unit by checking for line voltage between terminals N(1) and 3 on indoor unit. • **Blown fuse on the Indoor control board.** (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board.**(replace)

Correct any issues before resuming the troubleshooting procedure.

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.)

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Faulty Fan motor** Check windings of fan motor for open or shorted windings. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. Replace control board.

Correct any issues before resuming the Troubleshooting procedure.

9A23YGX, 12A23YGX, 12A23ZGX (CONTINUED)

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan is operating properly. Set unit to "COOL" mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if the following conditions apply • **No call for cooling** (verify that there is a call for cooling) • **No Control Power to fan** Verify by checking for line voltage on terminals 2 and 3 of the outdoor unit. • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check motor leads with a digital volt meter. Check for open windings, check for windings shorted to the case.

Correct any issues before resuming the troubleshooting procedure.

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions will not apply: **No Call for Cooling** (verify that there is a call for cooling) **No control power to compressor** (verify that there is control voltage by checking for voltage on terminals 2 and 3 of the outdoor unit. This should be line voltage. If no voltage is present, check for blown fuse on control board. If fuse is ok, replace control board. **Compressor overload activated.** Turn unit off for 15 minutes to allow compressor to cool, and the thermal cutout to reset. Restart unit. Allow to run for several minutes. Verify that suction pressure is between 60 and 70 PSI. Check current (RLA) on compressor. If RLA is more than 2 times the stated RLA value on outdoor unit label, replace capillary assembly. **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace. **Excessively Low outdoor temperatures**

Correct any issues before resuming the troubleshooting procedure.

9A23YGX, 12A23YGX, 12A23ZGX (CONTINUED)

If unit operates but will not cool

Check the filters of the indoor unit.
Verify that there is NO blockage in and around both indoor and outdoor unit.

Check for proper suction pressure.

Is suction pressure between 60 and 70 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. • **High Suction Pressure** evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the suction pressure is correct.) • **Low Suction Pressure** If the pressure is too low, add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • **Excessively Low outdoor temperatures**

Correct any issues before resuming the troubleshooting procedure.

Unit will not properly control room temperature

Verify that indoor unit is not mounted in direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters and around unit for a blockage of air flow, and clean or correct if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc.	Check Ambient Air sensor for resistance. Resistance should be about 15K ohms. Replace if necessary.

Excessive low temperatures

Verify that when the call for cool has been satisfied that the compressor shuts off.

Does the compressor shut off when call for cool has been satisfied?	
YES	NO
Normal Operation	• **Stuck Control Relay** Verify that no voltage is present between terminals 2 and 3. (Faulty Control Board) • **Faulty Ambient Air sensor** Check Ambient Air sensor for resistance. Resistance should be about 15K ohms. Replace if necessary.

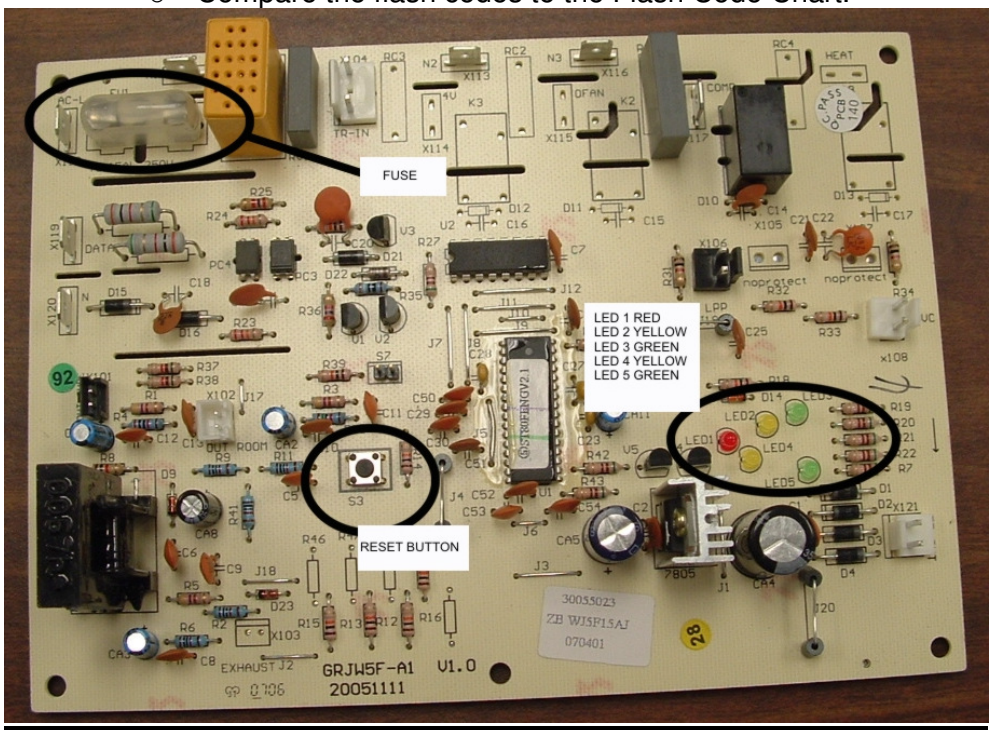
9A23YGX, 12A23YGX, 12A23ZGX (CONTINUED)

Notes:

18A23ZGX

The outdoor unit control board provides LED indicators of system status and malfunctions. To access this board:

- Remove side panel of outdoor unit.
- Compare the flash codes to the Flash Code Chart.



FLASH CODES 18A23ZGX

Note: Flash codes must be interpreted by observing both the indoor and outdoor units

12A23ZGX FLASH CODES			
OUTDOOR	**INDOOR**	**TRANSLATION**	**SUGGESTION**
LED 4 AND 5 FLASHES RANDOMLY	NO FLASHES	NORMAL OPERATION	NO ACTION NECESSARY
LED 1 ON	1 FLASH	HIGH PRESSURE PROTECTION	Shortage of refrigerant, blockage of air filter, poor ventilation or air flow at condenser coil, contaminated system(air, water, etc.), capillary tube blockage, filter-drier blockage, compressor malfunction, protection relay malfunction (compressor), discharge sensor malfunction, outdoor temperature too high.
LED 3 ON	3 FLASHES	LOW PRESSURE PROTECT	Outside temperature out of range. Tube sensor malfunction (indoor)
LED 1 AND 3 ON	4 FLASHES	AIR EXAUST PROTECTION (COMPRESSOR OVERHEATING PROTECTION)	Blockage of air filter, poor ventilation or air flow at condenser coil, contaminated system (air, water, etc.), capillary tube blockage, filter-drier blockage, compressor malfunction, protection relay malfunction (compressor), outdoor temperature too high.
LED 2 ON	5 FLASHES	OVERCURRENT PROTECTION	Tube temperature outdoor (cool) or Indoor (heat) too high. Outdoor temperature too high, insufficient outdoor air flow, refrigerant flow malfunction,
LED 1,2 AND 3 ON	6 FLASHES	COMMUNICATIONS MALFUNCTION	Communications lines (terminal 2 and ground), Indoor main control board. Outdoor control board.

18A23ZGX (CONTINUED)

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary. If not, Go to page 1 and see “Prior to troubleshooting”.

Reset the system with the reset button on the outdoor unit control board.
Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Indoor unit is not receiving power** • **Blown fuse on the Indoor control board**. (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board**.(replace)

Correct any issues before resuming the troubleshooting procedure.

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.) Set fan speed to high,

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Faulty Fan motor** Remove access to the control board. Locate Connector X1. Check for open circuits between any of the terminals. Turn unit to cool mode and turn set temperature to 61°. Verify that outdoor unit is operating. (If outdoor unit is operating and indoor fan is not, replace indoor fan motor and capacitor. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. Replace control board.

Correct any issues before resuming the Troubleshooting procedure.

18A23ZGX (CONTINUED)

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan is operating properly. Turn unit to COOL mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if any of the following conditions apply: • **No call for cooling** (verify that there is a call for cooling) • **Blown fuse on outdoor control board** Replace fuse with 3.15amp 250V fuse. • **No control power to fan** Verify by checking for line voltage on terminals 2 and 3 of the outdoor unit. • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check motor leads with a digital volt meter. Check for open windings, check for windings shorted to the case. • **Excessively Low outdoor temperatures**

Correct any issues before resuming the Troubleshooting procedure.

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions apply: • **No Call for Cooling** (verify that there is a call for cooling) • **Outside Temperature below 30°F** • **No control power to compressor** check for blown fuse on control board. If fuse is ok, replace control board. • **Compressor overload activated.** Turn unit off for 15 minutes to allow compressor to cool, and the thermal cutout to reset. Restart unit. Allow to run for several minutes. Verify that suction pressure is between 60 and 70 PSI. Check current (RLA) on compressor. If RLA is more than 2 times the stated RLA value on outdoor unit label, replace capillary assembly. • **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. • **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace.

Correct any issues before resuming the Troubleshooting procedure.

18A23ZGX (CONTINUED)

If unit operates but will not cool

Check the filters of the indoor unit.
Verify that there is NO blockage in and around both indoor and outdoor unit.

Check for proper suction pressure.

Is suction pressure between 60 and 70 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. • **High Suction Pressure** evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the pressure is correct.) • **Low suction Pressure** add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • **Excessively Low outdoor temperature and/or high humidity**

Correct any issues before resuming the Troubleshooting procedure

Unit will not properly control room temperature

Verify that the indoor unit is mounted away from direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters for blockage, and clean if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc.	• **Faulty Ambient Air sensor** Check Ambient Air sensor for resistance. Resistance should be about 15K ohms. Replace if necessary.

Low Ambient Operation (18A23ZGX model only)

If low ambient operation is desired, the following items have to be considered.

- A Low ambient kit (fan speed controller) may be installed. ICM326HC is the recommended product.
- Low temp shutdown sensor must be defeated. This is accomplished by clipping the leads to the sensor and placing a 15KΩ resistor between the leads.
- If the low temp sensor is defeated, you MUST add a crankcase heater of ample size to prevent slugging due to low temperature oil.

Notes:

Unit does not operate in Heat Mode

Turn unit on and turn to heat mode. Adjust temperature to a setting above ambient. Watch Red LED on unit. After a few minutes, it should either turn on or blink. If the light blinks, count the blinks if there are 7 blinks (Error code E7), check the gray sensor cable between the indoor and outdoor unit. Check this cable for shorts or opens, and make sure that it is connected properly. Repair or replace as necessary.

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary. If not, Go to page 1 and see "Prior to troubleshooting".

Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Indoor unit is not receiving power** • **Blown fuse on the Indoor control board.** (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board**.(replace)

Correct any issues before resuming the troubleshooting procedure.

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.)

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Defrost mode** • **Faulty Fan motor** Remove access to the control board. Locate Connector X1. Check for open circuits between any of the terminals. If motor has open windings, replace motor. If motor windings aren't open, replace control board. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. Replace control board.

Correct any issues before resuming the troubleshooting procedure.

9H43YCX, 12H43YCX (CONTINUED)

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan is operating properly. Turn unit to COOL mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if the following conditions apply • **No call for cooling** (verify by checking for line voltage on terminals N(1) and 1 of outdoor unit.) • **Defrost Mode** • **No Control Power to fan** Verify by checking for line voltage on terminals N(1) and 3 of the outdoor unit. Unit must not be in defrost mode. • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check motor leads with a digital volt meter. Check for open windings, check for windings shorted to the case. • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire.

Correct any issues before resuming the Troubleshooting procedure.

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions apply: **No Call for Cooling** verify that there is a call for cooling **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. **Defrost Mode** **No control power to compressor** verify that there is control voltage by checking for voltage on terminals L1 and 1 of the outdoor unit. This should be line voltage. If no voltage is present, check for blown fuse on control board. If fuse is ok, replace control board. **Compressor overload activated.** Turn unit off for 15 minutes to allow compressor to cool, and the thermal cutout to reset. Restart unit. Allow to run for several minutes. Verify that suction pressure is between 90 and 145 PSI. Check current (RLA) on compressor. If RLA is more than 2 times the stated RLA value on outdoor unit label, replace capillary assembly. **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace.

Correct any issues before resuming the Troubleshooting procedure.

If unit operates but will not cool (or heat)

Check the filters of the indoor unit.
Verify that there is NO blockage in and around both indoor and outdoor unit.

Check for proper suction pressure.

Is suction pressure between 90 and 145 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. • If the pressure is high, evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the pressure is correct.) • If the pressure is too low, add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • Reversing Valve inoperable or incorrectly connected. Check for Voltage between terminals N(1) and 2 on outdoor unit. Reading should be 0 volts AC. If voltage is present, check for mis-wiring.

Unit will not properly control room temperature

Verify that indoor unit is not mounted in direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters for blockage, and clean if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc.	Replace ambient air sensor located inside indoor unit.

Excessive low temperatures

Verify that when the call for cool has been satisfied that the compressor shuts off.

Does the compressor shut off when call for cool has been satisfied?	
YES	NO
Normal Operation	**Stuck Control Relay** Verify that no voltage is present on between terminals 2 and 3. (Faulty Control Board)

Notes:

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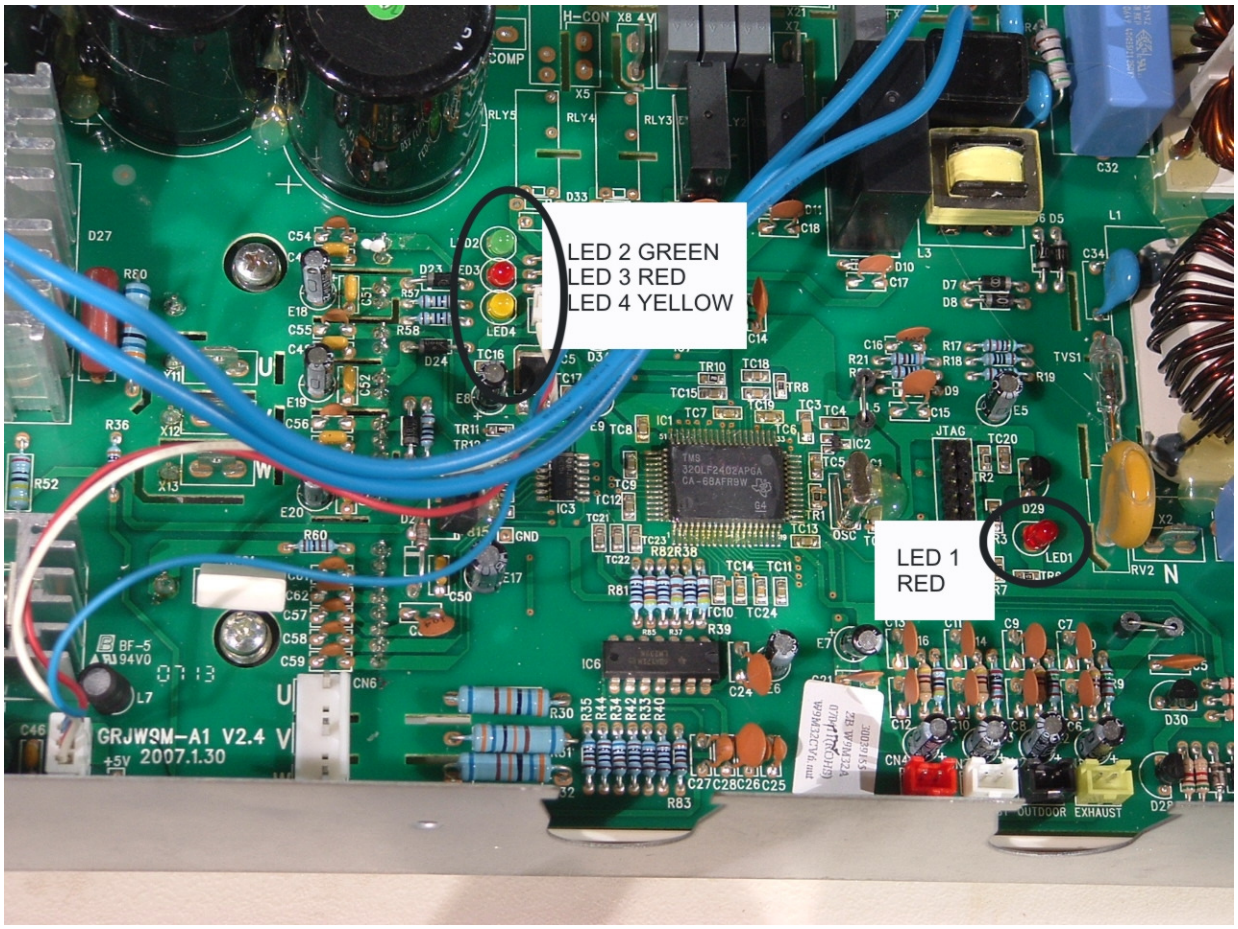
12H43ZGX

This model operates on DC inverter technology. Many of the operational assumptions of standard unitary systems do not apply to this unit. Please read the troubleshooting guide thoroughly, prior to making assumptions that the unit is not operating properly.

Model Specific Notes:

- In cool (or heat) mode the compressor is a continuous run unit. The compressor does not start and stop. When the demand for cool has been satisfied, the compressor slows down to 17 RPM, until the demand for cool (or heat) is required again. Compressor speed is dependant on the demand load. (More cool needed=faster compressor operation).
- This unit is equipped with an outdoor ambient temperature sensor that prohibits startup if the temperature drops below 30°F.
- A low ambient kit is not recommended for this model
- The outdoor unit control board provides LED indicators of system status and malfunctions. To access this board:
    - Remove top panel of outdoor unit.
    - Remove cover from circuit board enclosure.

  Compare the flash codes to the Flash Code Chart.



12H43ZGX Flash Codes

LED 2

Communications Indicator This LED will flash randomly signifying transmit/receive communications from indoor unit.

If this light is not flashing, a communications problem may exist. Check the following:

- Ground line between indoor and outdoor unit.
- Data line (Terminal 2) between indoor and outdoor unit.

LED 3

FLASHES	TRANSLATION	SUGGESTION
1	Limited Frequency	
2	Dropped Frequency	
3	Limited Frequency	Compressor overload
4	Dropped Frequency	Anti-freeze Protection
5	Tube Sensor	Outdoor tube sensor malfunction (replace)
6	Ambient air sensor (outdoor)	Ambient Air sensor (Outdoor) malfunction (replace)
7	Discharge Sensor	Discharge Sensor malfunction (replace)
8	Starting Temperature	Starting Temperature reached (Normal condition)

12H43ZGX Flash Codes (continued)

LED 4

FLASHES	TRANSLATION	SUGGESTION
1	Compressor operation	Compressor is operating (Normal condition)
2	Defrost	Unit is in defrost mode.
3	Anti-freeze	Unit is in anti-freeze protect mode
4	IPM	IPM module protection (possible faulty IPM see IPM codes)
5	Overcurrent protection active	Sudden drop of supply voltage.
6	Overcurrent protection Active	Tube temperature outdoor (cool) or Indoor (heat) too high. Outdoor temperature too high, insufficient outdoor air flow, refrigerant flow malfunction,
7	Discharge protection active	Shortage of refrigerant, blockage of air filter, poor ventilation or air flow at condenser coil, contaminated system(air, water, etc.), capillary tube blockage, filter-drier blockage, faulty 4 way valve, compressor malfunction, protection relay malfunction (compressor), discharge sensor malfunction, outdoor temperature too high.
8	Compressor overload protection active	Insufficient or excessive refrigerant, blockage of capillary (increase of suction temperature), compressor operating improperly, (stuck or worn bearings, malfunction of overload protector on compressor, faulty discharge valve.)

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12H43ZGX Control Board LED Flash Codes

LED 1

FLASHES	TRANSLATION	SUGGESTION
1	compressor	normal operation
2	discharge pressure protect	gas leak, discharge sensor error
3	SIPM module protect	See LED 7
4	current overload protect	Current overload, Voltage too low (replace outdoor control board)
5	overload protect	See LED 2
6	anti-freeze protect	check/ replace indoor temperature sensor
7	sensor error	See LED 2
8	communication error	See LED 2, check communications line, replace outdoor PCB

LED 2

FLASHES	TRANSLATION	SUGGESTION
1	Cooling Overload protect active	Check/replace outdoor coil sensor
2	heating overload protect active	Check/replace indoor tube sensor
3	Communications Error (no accurate data received)	check/replace indoor and outdoor main board
4	SIPM communications error	check/replace outdoor mainboard and/or IPM
5	N/A	
6	Outdoor Ambient temp sensor error	check/replace outdoor ambient temp sensor
7	indoor coil temp sensor error	check/replace indoor pipe sensor
8	outdoor discharge sensor error	check/replace outdoor discharge sensor
9	indoor communications error	check/replace indoor main board

LED 3

FLASHES	TRANSLATION	SUGGESTION
2	defrost mode	Normal Operation
8	Stop operation	Operation has stopped. will clear when system errors are cleared.

LED 7

FLASHES	TRANSLATION	SUGGESTION
1	Stop Replacement	Ready to start
2	Instant Current is too High or Low Module voltage	Check/Replace IPM Module
3	Abnormal low speed	
4	Switch Failure	
5	Overload-Stop	
6	Overheat	Compressor overheat
7	Overheat or Fin Transducer error	replace the compressor temp transducer or IPM module
8	poor performance	Replace IPM module
9	Poor communication performance	Replace IPM module
10	Low DC voltage	
11	Overheat (fin)	
12	Abnormal High Speed	
13	Abnormal EPROM data	
14	High DC Voltage	

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary. and no error codes exist from the main control board in the outdoor unit.

Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Unit is not receiving power** • **Blown fuse on the Indoor control board.** (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board** (check flash codes on outdoor unit)

Correct any issues before resuming the Troubleshooting procedure.

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.) Set fan speed to high.

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Defrost mode** • **Excessively Low outdoor temperatures** • **Faulty Fan motor** Check fan motor for shorted or open windings. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. (check flash codes on outdoor unit)

Correct any issues before resuming the Troubleshooting procedure.

12H43ZGX (CONTINUED)

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan is operating properly. Turn unit to COOL mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if the following conditions apply • **No call for cooling** • **Defrost Mode** • **No Control Power to fan** Check outdoor control board connectors X7 and X21 for line voltage. • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check fan motor for shorted or open windings. • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire.

Correct any issues before resuming the Troubleshooting procedure.

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions apply: • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. • **No control power to compressor** Check voltage between X11, X12, and X13 (marked U,V, and W) on outdoor control board. Voltage on any 2 terminals should be approximately 320 VDC. • **Compressor overload activated.** Check Yellow LED on Main control board for 5 or 6 flashes. • **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. • **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace.

Correct any issues before resuming the Troubleshooting procedure.

NOTE: Compressor winding resistance can be checked from the wires connected to terminals U,V, & X of the main control board. Remove wires from terminals and check resistance between U-V, U-X, and X-V. Resistance should be approximately 0.578Ω.

12H43ZGX (CONTINUED)

If unit operates but will not cool (or heat)

Check the filters of the indoor unit.
Verify that there is NO blockage in and around both indoor and outdoor unit.

Check for proper suction pressure.

Is suction pressure between 90 and 145 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. • If the pressure is high, evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the pressure is correct.) • If the pressure is too low, add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • Reversing Valve inoperable or incorrectly connected. Check for Voltage between terminals X8 and X19 on outdoor unit control board. Reading should be 0 volts AC.

Unit will not properly control room temperature

Verify that indoor unit is not mounted in direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters for blockage, and clean if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc.	Check Ambient Air sensor for resistance. Resistance should be about 15K ohms. Replace if necessary.

Excessive low temperatures

Verify that when the call for cool has been satisfied that the indoor coil temperature is equal to setpoint. Allow proper length of time for accurate reading. (Compressor DOES NOT STOP OPERATION)

Is coil temperature +/- 2° of setpoint?	
YES	NO
Normal Operation	**faulty sensor** (check error codes)

12H43ZGX (CONTINUED)

Notes:

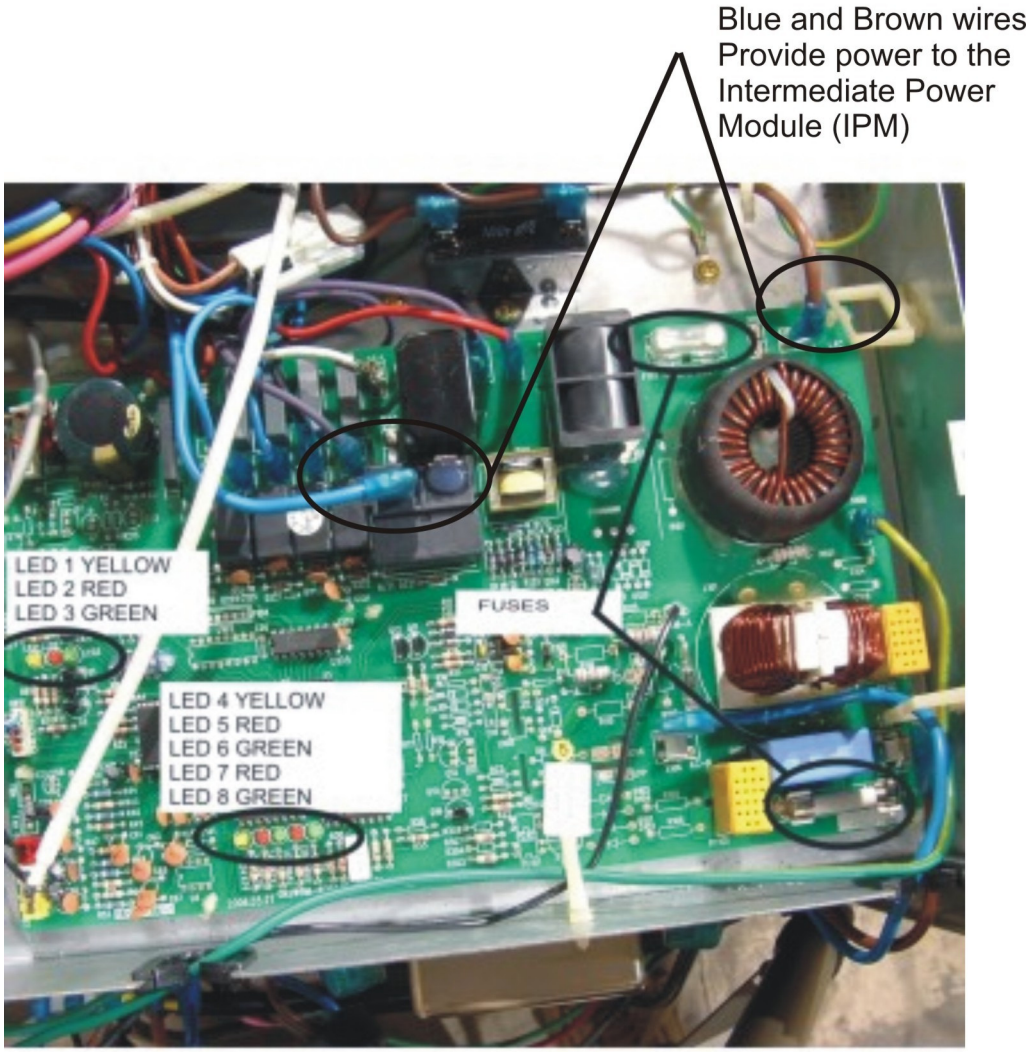
18H43ZGX

This model operates on DC inverter technology. Many of the operational assumptions of standard unitary systems do not apply to this unit. Please read the troubleshooting guide thoroughly, prior to making assumptions that the unit is not operating properly.

Model Specific Notes:

- In cool (or heat) mode the compressor is a continuous run unit. The compressor does not start and stop. When the demand for cool has been satisfied, the compressor slows down to 17 RPM, until the demand for cool (or heat) is required again. Compressor speed is dependant on the demand load. (More cool needed=faster compressor operation).
- This unit is equipped with an outdoor ambient temperature sensor that prohibits startup if the temperature drops below 30°F. Unit will restart after temperature rises above 40°F.
- This unit is equipped with a 2 speed condenser fan.
- A low ambient kit is not recommended for this model
- The outdoor unit control board provides LED indicators of system status and malfunctions. To access this board:
    - Remove top panel of outdoor unit.
    - Remove cover from circuit board enclosure.

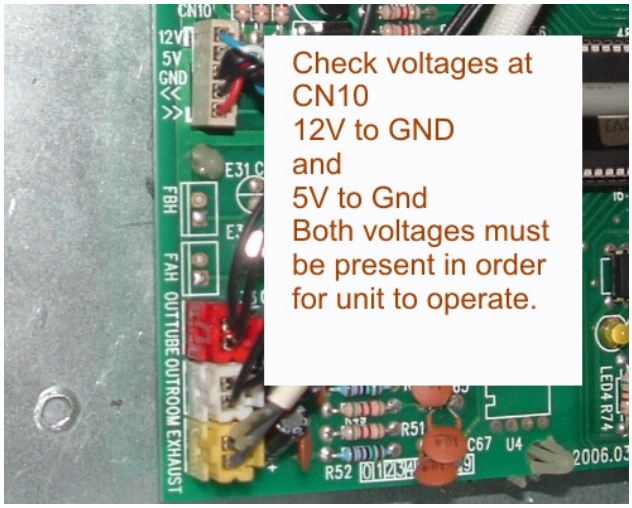
  Compare the flash codes to the Flash Code Chart for this model.



IF YOU HAVE NO FLASHING LEDS:

Check both fuses on the main control board and replace if necessary. If you still receive no flash codes, perform the following checks. If the outdoor unit is receiving power from the disconnect source and your cabling (indoor to outdoor) is correct, Regardless of the mode, the communications lights (LED6 and LED8) should flash.

Check the control output voltages from the main control board. The main control board supplies +5VDC and +12VDC to the IPM module. These voltages can be verified using a DC volt meter. Check each voltage (12V and 5V) to the ground reference at the same connector (CN10). DO NOT USE CHASSIS GROUND. If voltages are present then in most cases the Main control board is still functional. If either or both of these voltages are not present at the CN10 connector, the Main control board must be replaced. See photo below for connector identification. If voltages are present, continue with troubleshooting procedures.



If you have normal LEDs and no compressor operation:

1. Check output voltage at the rectifier module. (Black and white wires that connect to the IPM module).
2. Check this voltage by removing the black and white leads from the rectifier module, and restoring power.
3. This voltage should read between approximately 90% of input voltage. (Calculate by reading AC input voltage at terminals L1 and L2 of outdoor unit and multiplying by .9. This should be very close to your DC output voltage of the rectifier (±10 %.) If this voltage is outside this range, check the blue and brown wire terminals for voltage input. There should be line voltage here. (Same as L1 and L2 reading as mentioned earlier).
4. If there is no line voltage present, verify the condition of the fuses located on the main board. Replace if necessary.
5. If there is no voltage present at the rectifier input and the fuses located on the main board are good, the main board will need to be replaced.
6. If there is AC line voltage present at the rectifier input, and no DC voltage at the output, the rectifier is bad and needs to be replaced.
7. If voltage is between acceptable as noted above, IPM module needs to be inspected further.
8. Remove power from outdoor unit and reconnect black and white leads.
9. Double check that compressor connections are to the proper terminals.
   Yellow –Terminal U
   Blue – Terminal V
   Red(pink) – Terminal W
10. Remove the 3 wires connected to terminals U, V, and W from IPM module. (U-V, V-W, and U-W). Check for a balanced resistance between all of the leads of the compressor. Resistance should be approximately .578 Ω. All 3 measurements should be within 10% of each other. If not Compressor is faulty and must be replaced.
11. Check for a grounded compressor by checking for resistance between each of the leads and ground. There should not be a short between any lead and ground. If any lead is shorted, the compressor is faulty and must be replaced.
12. Check IPM module output by checking between each of the compressor terminals (U, V, and W) and a ground point. Output voltages should be approximately 90% of the AC input voltage.(This is a DC voltage).

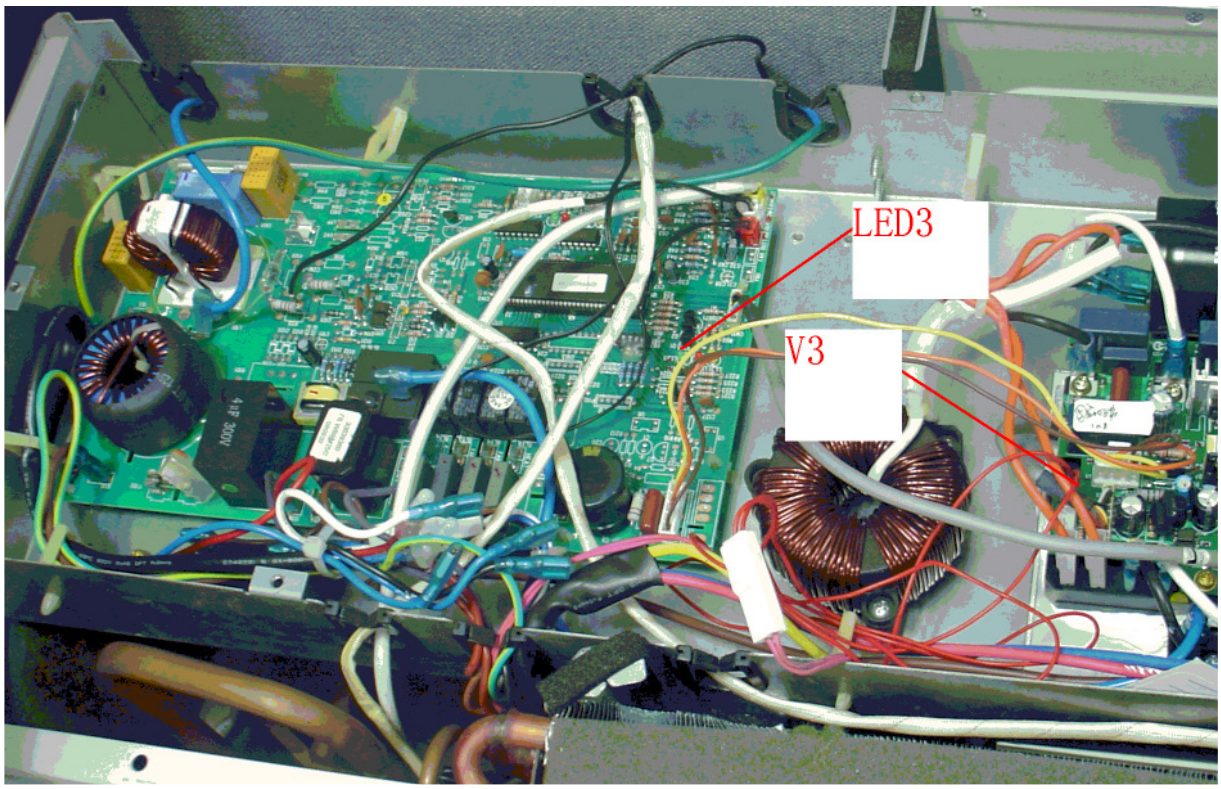
TROUBLESHOOTING FLASH CODES

Flash codes for the diagnosis of Mini-Split Systems Model Number: MS418HP13240CA

LED 1	one	Compressor operate (Normal Operation)
	two	Discharge protect Sensor on output of compressor (liquid Line) will stop compressor operation if liquid line gets too hot. Check Exhaust temp sensor (yellow connector on mainboard)
	three	SIPM module protect with shutdown. High temperature condition of IPM module. Should go away when IPM cools down. Caused by possibly no heat sink compound or loose connection between IPM and heat sink.
	four	Current overload protect with shutdown. Compressor is in High Current condition and has been shut down.
	five	Overload protect with shutdown. System Current limit has been reached and has shut down.
	six	Anti-freeze protect with shutdown. Outside temperatures are too low for efficient operation. Indoor coil temperatures are not within operating range.
	seven	Sensor error with shutdown. Short or open sensor. Other Flash codes may reflect which sensor is bad.
	eight	Communication error(including indoor unit main board and SIPM) with shutdown
	nine	Compressor high pressure protect with shutdown.
	ten	Compressor low pressure protect with shutdown
	eleven	N/A
LED 2	one	Cooling overload protection with shutdown. Caused by overworking system when in cool mode. Possible open window, undersize for conditions.
	two	Heating overload protection with shutdown. Caused by overworking system when in heat mode.
	three	Communication error with indoor unit (no accurate data received in 3 min). Reset power for 1 min. If flash code doesn't clear, check Communications cables (terminals 2 and Ground) between indoor unit for opens or shorts.
	four	Communication error with SIPM (no accurate data received in 10 sec). Check grey cable between CN10 (main board of outdoor unit) to IPM module.
	five	N/A
	six	Outdoor environmental sensor error (or fail). Also check LED1 for 7 flashes
	seven	Indoor coil temp sensor error (or fail). Also Check LED1 for 7 flashes
	eight	Outdoor discharge sensor error (or fail). Also Check LED1 for 7 flashes
	nine	Communication error from indoor unit. Check Communications cables.

LED 3	one	Quick cooling/heating. Usually on Startup or immediately after a large change in set point Temperature. (Normal condition unless it is continuous)
	two	Defrost (in defrost mode)
	three	Oil return
	four	Rated cooling/heating capacity
	five	Max cooling/heating capacity
	six	Med cooling/heating capacity
	seven	Min cooling/heating capacity
	eight	Shutdown (Will be active if unit is shutdown for errors or unit is turned off with remote.
	nine	Low pressure can't resume. (Unit has lost most or all of its refrigerant.
LED 4	one	Discharge protect with reduced frequency (N/A)
	two	Current overload protect with reduced frequency(N/A)
	three	Cooling overload protect with reduced frequency(N/A)
	four	Heating overload protect with reduced frequency(N/A)
	five	Anti-freeze with reduced frequency(N/A)
	six	Shutdown with bottom frequency(N/A)
LED 5	one	Discharge protect with frequency limited(N/A)
	two	Current overload with frequency limited(N/A)
	three	Cooling overload with frequency limited(N/A)
	four	Heating overload with frequency limited(N/A)
	five	Frequency at 7Amps for 3 min
	six	Frequency at 9Amps for 3 min
LED 6	on	Computer data receiving/sending (normal for random flashes)
	off	Computer data received/sent (normal for random flashes)

LED 7	one	Stop replacement (system ready)
	two	Instant current expand or too low 17 RPM voltage. Replace IPM.
	three	Abnormal low speed
	four	Switch failure
	five	Overload with shutdown (IPM Module or Compressor fault)
	six	OH over temperature (Compressor Overheating)
	seven	Abnormal OH or Fin transducer Outdoor coil Overheating
	eight	Poor performance in enhancing speed IPM Module
	nine	Poor performance in communication
	ten	Poor DC voltage (IPM or Rectifier Faulted)
	eleven	Over FIN temperature (
	twelve	Abnormal high speed (IPM Control circuit)
	thirteen	Abnormal EEPROM data (Main board Control circuit)
	fourteen	Over DC voltage (IPM Module faulted)
LED 8	on	Computer data receiving/sending (normal for random flashes)
	off	Computer data received/sent (normal for random flashes)



950-0097-revK 7/11/08
IPM MODULE Code Explanations

There are (2) LEDs on the IPM module. During normal operation the Green LED will be illuminated when the compressor is in operation.

If the green LED is illuminated and the compressor is not operating,

Shutdown unit by removing the disconnect or turning off the breaker, wait 1 minute then restart.

Unit will attempt to restart after 3 minutes.

After the delay timer has expired, the green LED on the IPM module will illuminate indicating that power is being applied to the compressor.

Verify the output voltage of the IPM module. This should be a DC voltage equal to approximately 90% of the incoming AC line voltage.
Example:
If AC line voltage is 230 VAC, DC output voltage should be approx 207 volts **DC**
If AC line voltage is 208 VAC, DC output voltage should be approx 187 volts **DC**

If proper voltage is present, IPM module is operating normally. If at this point compressor is not operating, Check for faulty compressor.

If red LED on IPM module is flashing:

The V3 led (see photo on previous page) on the IPM module occasionally will flash. This indicates a status of some of the monitored functions of the IPM module including but not limited to:

- IPM module temperature
- IPM output current
- IPM output voltage
- IPM communications

EXAMPLE
Counting the V3 flashes will tell you which LED on the main board needs to be examined to determine the state. For example if V3 is flashing 7 times between pauses, you would then refer to LED7. LED7 may be flashing 5 times. This would indicate a compressor overload condition.

One exception is if the IPM module is flashing and the corresponding indicator on the main board is not flashing, the IPM module is faulty.

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary, and no error codes exist from the main control board in the outdoor unit.

Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Unit is not receiving power** • **Blown fuse on the Indoor control board.** (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board** (check flash codes on outdoor unit)

Correct any issues before resuming the Troubleshooting procedure.

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.) Set fan speed to high.

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Defrost mode** • **Excessively Low outdoor temperatures** • **Faulty Fan motor** Remove access to the control board. Locate Connector X101. Check for open circuits between any of the terminals. Turn unit to cool mode and turn set temperature to 61°. Verify that outdoor unit is operating. (If outdoor unit is operating and indoor fan is not, replace indoor fan motor. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. (check flash codes on outdoor unit)

Correct any issues before resuming the Troubleshooting procedure.

18H43ZGX (CONTINUED)

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan are operating properly. Turn unit to COOL mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if the following conditions apply • **No call for cooling (**Make sure that set Point is set at 61°F and unit is in cool mode. Make sure room temperature is above 61°F • **Defrost Mode** Check flash codes for indication of Defrost mode • **No Control Power to fan** Check outdoor control board connectors X204 and AC-L (low speed) or X203 and AC-L (high speed) for line voltage. Only one of these combinations should produce an AC voltage output (depending on the state of the system) • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check motor leads with a digital volt meter. Check for open windings, check for windings shorted to the case. Using ohm Meter to check for open windings (check between any 2 leads for opens If open then motor must be replaced. Check for shorts (Any lead to case should not show a short) • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire.

Correct any issues before resuming the Troubleshooting procedure.

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions apply: **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. **Defrost Mode** **No control power to compressor** Check voltage between P1 and N and P2 and N on IPM module. Intermediate Power Module is located beside the main control board. Voltage on any 2 terminals should be approximately 320 VDC. **Compressor overload activated.** Check error codes. **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace.

Correct any issues before resuming the Troubleshooting procedure.

NOTE: Compressor winding resistance can be checked from the wires connected to terminals U,V, & X of the IPM Module. Remove wires from terminals and check resistance between U-V, U-X, and X-V. Resistance should be approximately 0.578Ω.

If unit operates but will not cool (or heat)

Check the filters of the indoor unit.

Verify that there is NO blockage in and around both indoor and outdoor unit.

18H43ZGX (CONTINUED)

Check for proper suction pressure.

Is suction pressure between 58 and 87 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. Check pressures at the Suction port of the Outdoor unit. (Larger Line). • If the pressure is high, evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the pressure is correct.) • If the pressure is too low, add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • Reversing Valve inoperable or incorrectly connected. Check for Voltage between terminals X114 and X202 on outdoor unit control board. Reading should be 0 volts AC. If voltage is present main board is faulty and must be replaced.

Unit will not properly control room temperature

Verify that indoor unit is not mounted in direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters for blockage, and clean if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc. Turn swing function on to allow a better mix of room temperatures.	Check Ambient Air sensor for resistance. Resistance should be about 15K ohms at 70°F. Replace if necessary.

Excessive low temperatures

Verify that when the call for cool has been satisfied that the indoor coil temperature is equal to setpoint. (± 2°F) Allow proper length of time for accurate reading. (NOTE: Compressor DOES NOT STOP OPERATION)

Is coil temperature +/- 2° of setpoint?	
Yes	No
Normal Operation	**faulty sensor** (check error codes on outdoor unit)

Check error codes (displayed on indoor unit) against the chart below and correct if necessary.

ERROR CODE	TRANSLATION	SUGGESTION
E3	Sensor Fail	Indoor pipe temperature sensor fail (replace)
E2	Sensor Fail	Indoor room temperature sensor fail (replace)
E4	Outdoor unit abnormal	See chart Below
E7	Defrost Sensor Fail	Defrost sensor (2 conductor gray cable that runs between indoor and outdoor unit is either open or shorted. Check cable connections and repair as necessary.
E8	Evaporator High/Low temp	See Abnormal operation explanation.
E1	Condenser coil temp sensor	Improper reading from Condenser coil temperature sensor. Check sensor, replace if necessary.

Flash Codes

If the indoor unit displays the error code of "E4" and there are no run or timer lights flashing, check for:

1. **Low refrigerant. (Please refer to charging chart for proper pressures). Check for leaks.**
2. **Contaminated refrigerant**
3. **Blocked capillary**

If the indoor unit displays the error code of "E4" and the "RUN" and/or "TIMER" lights are flashing:

Display LED		Translation	Suggestion
RUN	TIMER		
4 Flashes in 6 seconds		Anti-Freeze protection enabled	Check operation of indoor fan, check coil temperature sensor, Replace control board
1 flash in 1 second		Defrost Mode	Operation will resume when defrost cycle has completed.
1 flash in 3 seconds		Low indoor coil temperature (heat mode)	Indoor coil has not reached sufficient temperature to allow indoor fan to operate. Fan will not operate if coil temperature is below 84°F
	1 flash in 1 second	Low outdoor air temperature	Heat Mode- Outdoor temperature is below 14°

MS424A13230A, 24H43ZCX

If Indoor unit does not show a displayed error code, use the chart below.

LED FLASHES			
RUN	**TIMER**	**TRANSLATION**	**SUGGESTION**
4 times/6 seconds		Anti-Freeze Protect	Indoor fan (if not operating, check and replace.) Coil Temp Sensor (check and replace if necessary.) Clogged Evaporator (check and replace if necessary) Control Board (check and replace if necessary)
	1 time/1 second	Low amb temp. (outdoor)	
1 time/1 second		Defrost mode	Unit will restore normal operation when defrost cycle is completed.
1 time/3 seconds		Warm-Up	Indoor unit coil temperature has not reached operating temperature. Fan will operate when coil temperature is above 82°F.

Abnormal Operation Protection

On startup unit will operate for 5 minutes. At the end of this time, a 20 minute timer will start and unit will continue to run. If the temperature of the air handler coil rises above 77°F (cool mode) or less than 77°F (heat mode) and stays for 20 minutes, the unit will shut down via the control board. Timer will reset for 20 minutes. When the timer expires the unit will restart, and continue normal operation, providing that the air handler coil is less than 77°F (cool mode) or more than 77°F (heat mode) for more than 20 minutes.

Unit does not run

It is assumed that at this point that the proper checks have been made and corrected if necessary. If not, Go to page 1 and see "Prior to troubleshooting".

Press the On/Off button on the remote.

Did you hear an audible beep from the indoor unit?	
Yes	No
Normal response	Unit will not beep if any of these conditions apply: • **Unit is not receiving power** • **Blown fuse on the Indoor control board.** (Remove the control board from indoor unit and check the fuse located there. Fuse is 3.15 amp 250 volt) • **Faulty Remote Control** (replace) • **Faulty Control Board**.(replace)

Correct any issues before resuming the Troubleshooting procedure.

24A43ZCX, 24H43ZCX (CONTINUED)

Press the Mode button, changing the unit to fan mode (shown by the fan icon on the remote display.)

Did the indoor fan start operating?	
Yes	No
Normal response	Indoor fan will not operate if the following conditions apply: • **Timer function is activated** (Look for the timer off Icon in the bottom of the remote display. If it is active. Deactivate it by pressing the Timer ff button until the TIMER OFF icon disappears. Press the on/off button to turn the unit off. Verify that the Timer on function is not activated. if so, press the timer on button until the timer is deactivated. • **Defrost mode** • **Faulty Fan motor** Check fan motor at all 3 speeds. If no operation exists for any of the 3 speeds, check capacitor. Remove access to the control board. Locate connector for blower fan. Check for open circuit between the common and each of the speeds. If an open circuit Turn unit to cool mode and turn set temperature to 61°. Verify that outdoor unit is operating. (If outdoor unit is operating and indoor fan is not, replace indoor fan motor. • **Faulty Fan Capacitor** Check by using a capacitor checker • **Faulty control board**. Replace control board.

Correct any issues before resuming the Troubleshooting procedure.

Unit runs but does not operate properly.

It is assumed that compressor, outdoor fan, and indoor fan are operating properly.
Turn unit to COOL mode. Set temperature to 61°.

Is outdoor fan running?	
Yes	No
Normal Response	The outdoor fan will not operate if the following conditions apply • **No call for cooling** Verify by checking for line voltage on terminals L4 and 3 of the outdoor unit. (cool only models use L4 and 1) • **Defrost Mode** • **No Control Power to fan** Verify by checking for line voltage on terminals L4 and 3 of the outdoor unit. (cool only models use L4 and 1) • **Faulty Fan Capacitor** Check fan capacitor with a capacitance tester • **Faulty Fan Motor** Check motor leads with a digital volt meter. Check for open windings, check for windings shorted to the case. • **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire.

Correct any issues before resuming the Troubleshooting procedure.

24A43ZCX, 24H43ZCX (CONTINUED)

Is the compressor running?	
Yes	No
Normal Response	The Compressor will not operate if any of the following conditions apply: **No Call for Cooling** (verify that there is a call for cooling) **Compressor time delay is in effect.** Wait 3-5 minutes for compressor delay to expire. **Defrost Mode** **No control power to compressor.** Verify that there is control voltage by checking for voltage on terminals L4 and 1 of the outdoor unit. This should be line voltage. If no voltage is present, check for blown fuse on control board. If fuse is ok, replace control board. **Compressor overload activated.** Turn unit off for 15 minutes to allow compressor to cool, and the thermal cutout to reset. Restart unit. Allow to run for several minutes. Verify that suction pressure is between 90 and 145 PSI. Check current (RLA) on compressor. If RLA is more than 2 times the stated RLA value on outdoor unit label, replace capillary assembly. **Faulty Compressor capacitor** Check compressor capacitor with a capacitance meter if faulty, replace. **Faulty Compressor** Check for open windings, check for shorted windings, If faulty, replace.

Correct any issues before resuming the Troubleshooting procedure.

24A43ZCX, 24H43ZCX (CONTINUED)

If unit operates but will not cool (or heat)

It is assumed that compressor, outdoor fan, and indoor fan is operating properly.
Check the filters of the indoor unit.
Verify that there is NO blockage in and around both indoor and outdoor unit.
Reversing valve will be energized with line voltage on a call for heat.

Check for proper suction pressure.

Is suction pressure between 90 and 145 PSI?	
Yes	No
Normal response	The refrigeration system of this unit will not operate properly if the refrigeration level is too low or too high. • If the pressure is high, evacuate to proper pressure, removing small amounts each time, until suction pressure is within range. (It is not necessary to calculate subcool and superheat, providing the pressure is correct.) • If the pressure is too low, add refrigerant in small amounts to bring suction pressure within operating range. Monitor the RLA current of the compressor during this process. If the Current If RLA is more than 2 times the stated RLA value on outdoor unit label, and the suction pressure is still low, replace capillary assembly. • Reversing Valve inoperable or incorrectly connected. Check for Voltage between terminals N(1) and 2 on outdoor unit. Reading should be 0 volts AC. If voltage is present, check for mis-wiring.

Unit will not properly control room temperature

Verify that indoor unit is not mounted in direct sunlight
Verify that the unit is not oversized for the room conditions
Check filters for blockage, and clean if necessary.

Check the temperature of the intake air. Is intake air temperature more than 2° above setpoint?	
Yes	No
It is normal operation for compressor to operate if intake air temperature is above setpoint. Check for possible sources of hot air, such as an open window, vent, etc.	Replace ambient air sensor located inside indoor unit.

Excessive low temperatures

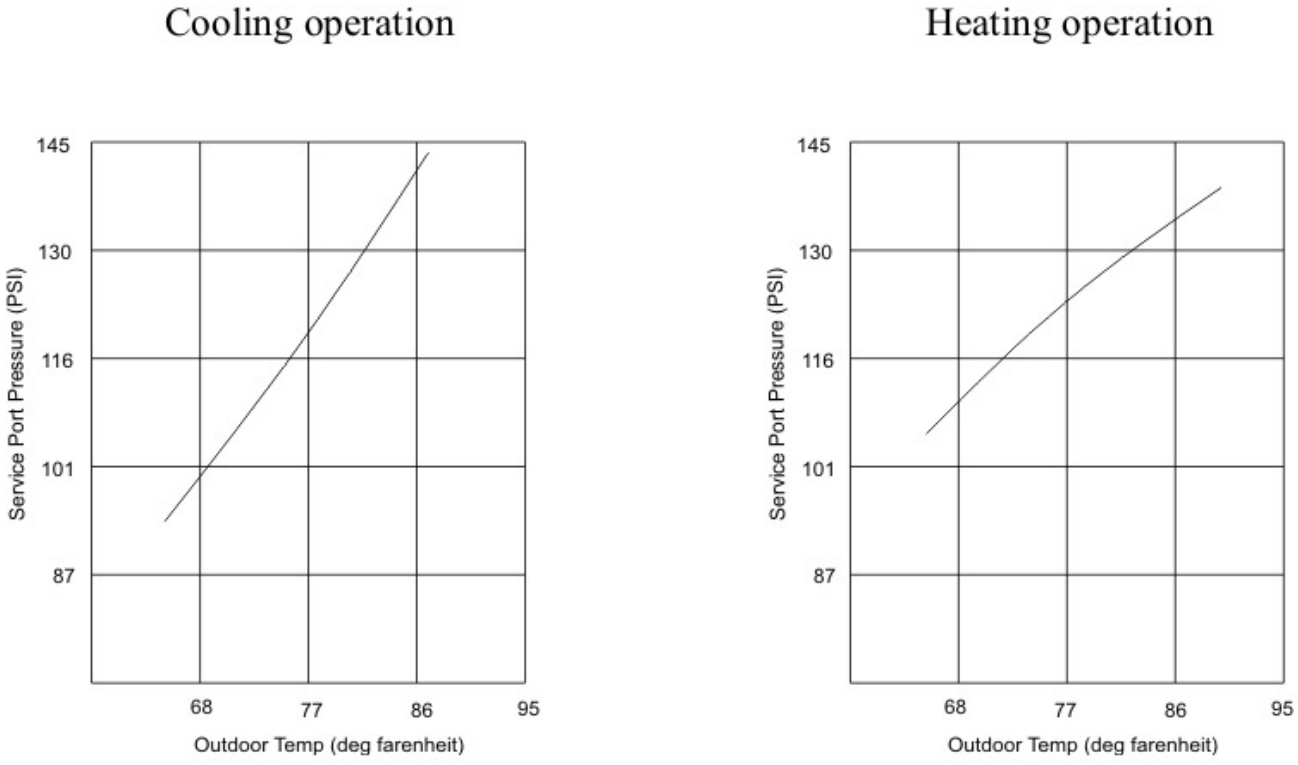
Verify that when the call for cool has been satisfied that the compressor shuts off.

Does the compressor shut off when call for cool has been satisfied?	
Yes	No
Normal Operation	**Stuck Control Relay** Verify that no voltage is present on between terminals L4 and 1. (Faulty Control Board)

9A23YGX, 12A23YGX, 12A23ZGX, MS218A13240 Pressures.

Typical pressure for the models listed above should be between 60 and 75 PSI as checked on the suction pressure service port. Pressure at the liquid line service port (if equipped), should be approximately 10 PSI above the suction pressure. There is no high pressure service port available on these models.

9H43YCX, 12H43YCX, 24H43ZCX, AND 24A43ZCX Pressures



Pressure Chart for models MSC49HP13115A, MSC412HP13115A, MSC424HP13230A, MSC424A13230A